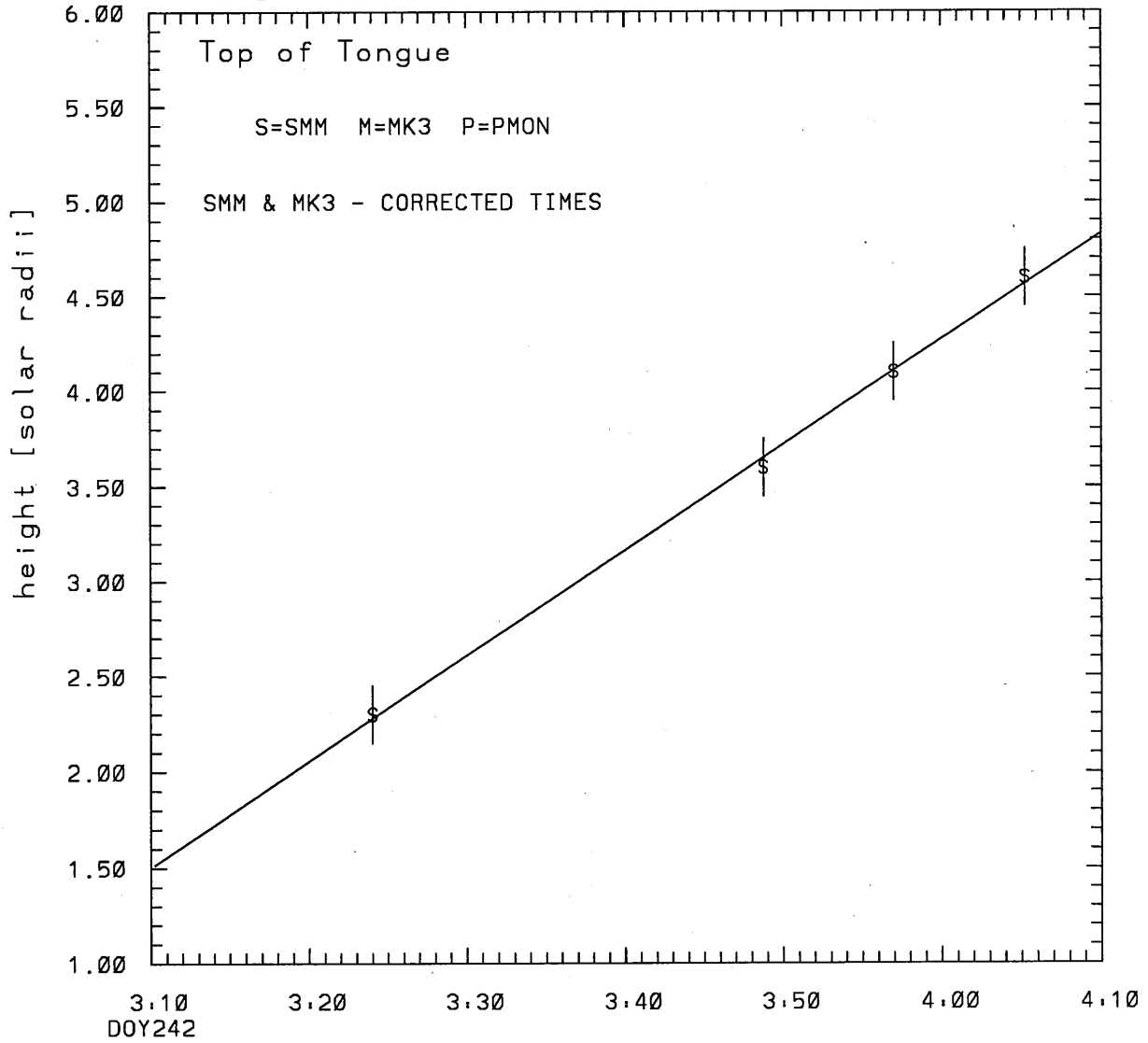


SMM C/P 1989 DOY242 151 +/- 0 degrees

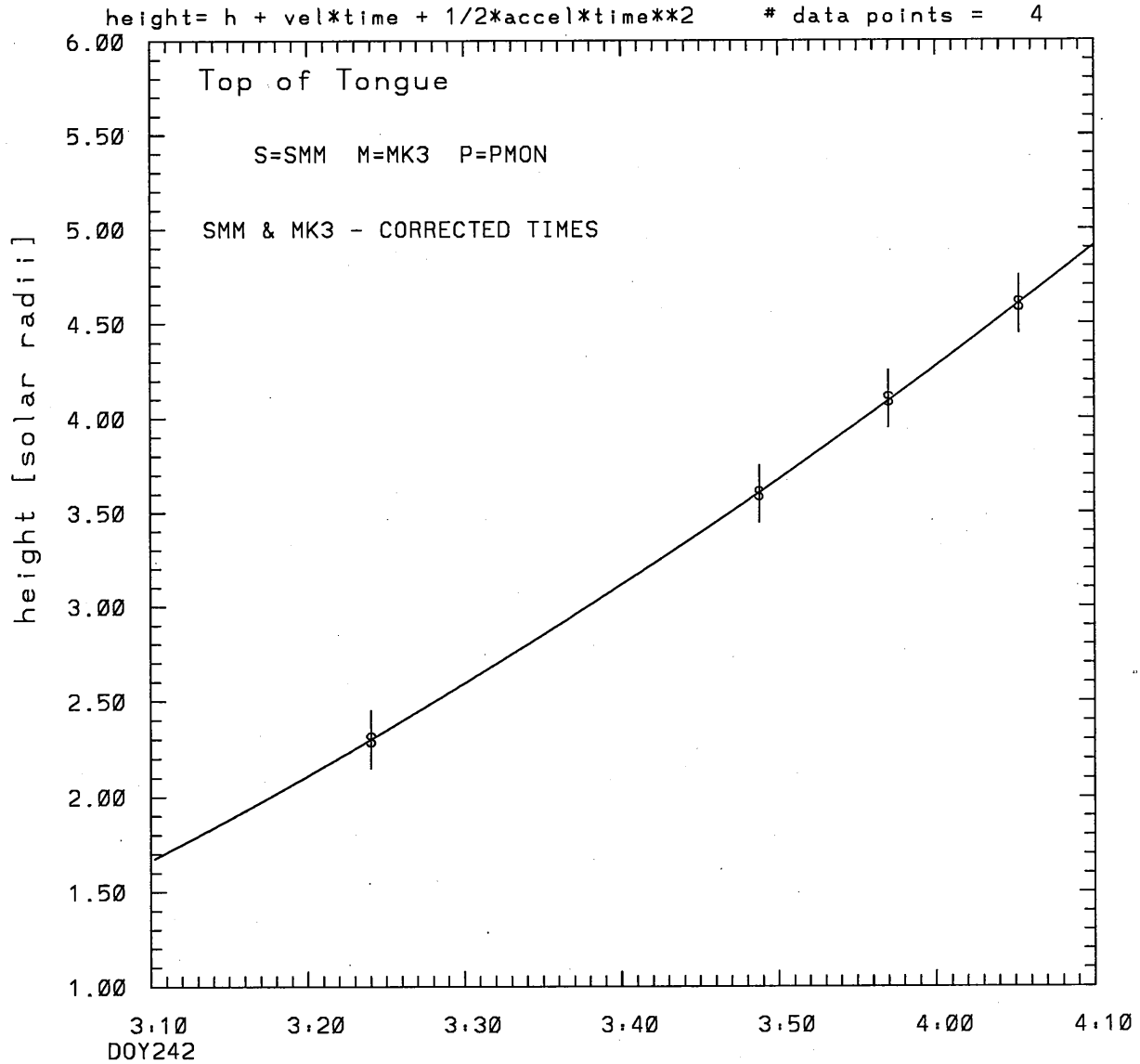
height = h + velocity\*time

# data points = 4



tstart=DOY242 3.1 +/- 0.2 [min.]  
radial velocity= 643. +/- 14. [km/sec]

SMM C/P 1989 DOY242 151 +/- 0 degrees

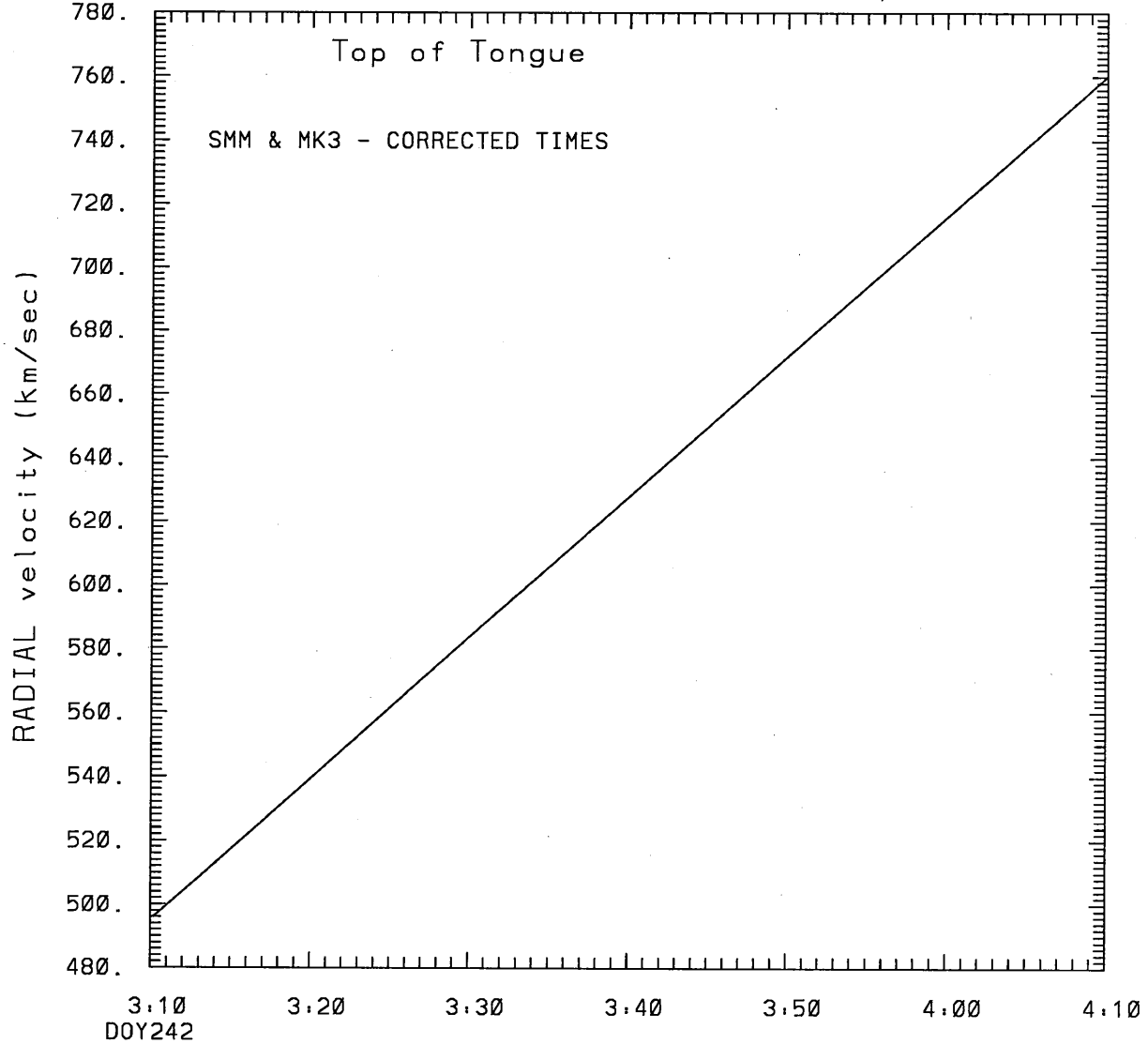


tstart=DOY242 2.55 +/- 1.3 [min.]

radial acceleration = 0.0736 +/- 0.0085 [km/sec\*\*2]

SMM C/P 1989 DOY242 151 +/- 0 degrees

height =  $h + vel*time + 1/2*accel*time**2$  # data points = 4



DOY242

tstart=DOY242 2:55 +/- 1.3 [min.]

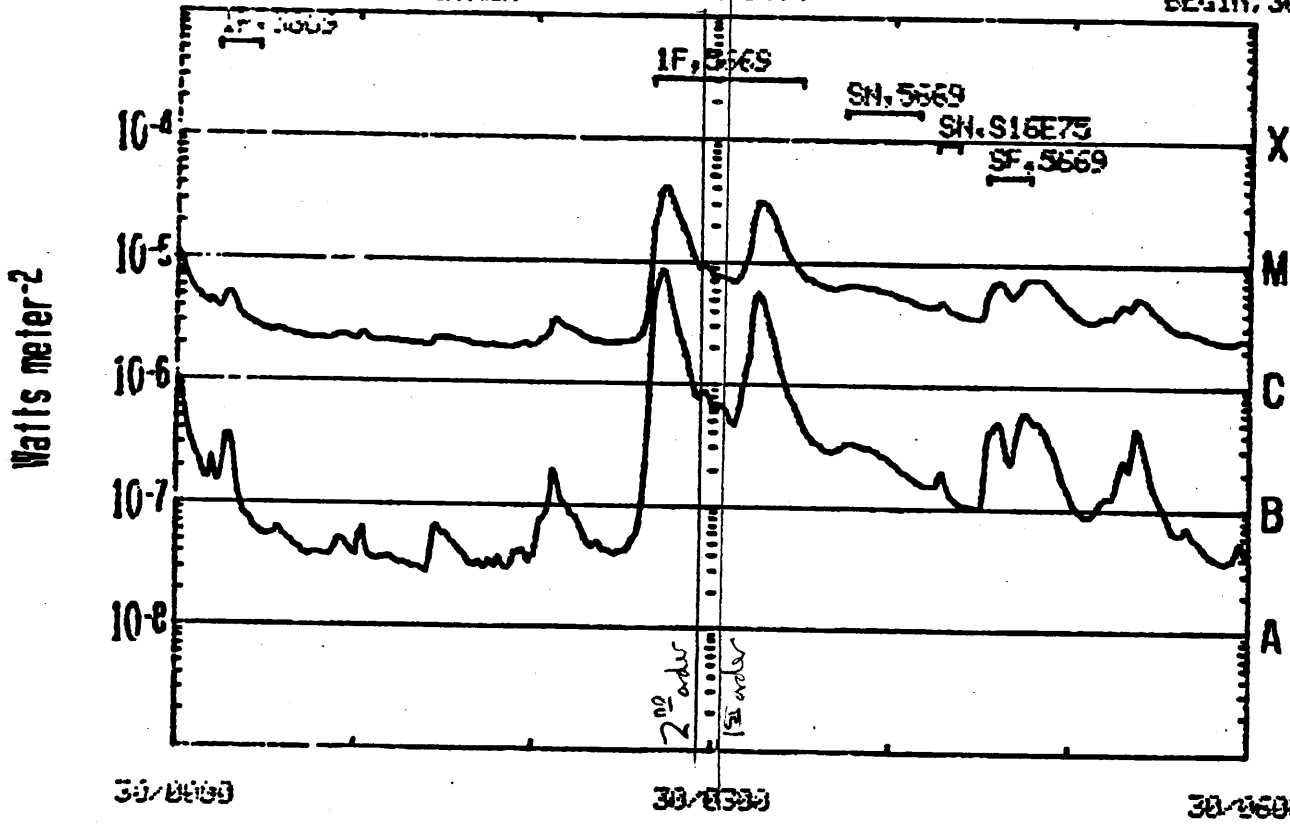
radial acceleration=0.736E-01 km/sec\*\*2

1989 Day 242

Top of Expanding Streamer  
center = 1490  
[3:04] 1st order  
[2:58] 2nd order

NEW and OPTICAL DATA TOGETHER

BEGIN: 30 AUG 89



GOES 7 0.5-4.0A GOES 7 1.0-8.0A  
OPTICAL FLARES

30/0000

30/0330

30/0500

SAA's  
NIGHT

GOES-7 1 MIN DATA: OPTICAL FLARE DUR. IMP. REGION

RUN: 1951UT  
1 SEP 89

\*\*\*\*\*  
This is a 1 order run  
\*\*\*\*\*

\*\*\*\*\*  
INPUT:  
\*\*\*\*\*

year	doy	time	radii	radius	error in angle	error in angle	datatype
1989	242	3:24: 1	2.30 +/-	0.15	151.0 +/-	0.5	SMM
1989	242	3:48:47	3.60 +/-	0.15	151.0 +/-	1.0	SMM
1989	242	3:57: 1	4.10 +/-	0.15	151.0 +/-	1.0	SMM
1989	242	4: 5:15	4.60 +/-	0.15	151.0 +/-	1.0	SMM

\*\*\*\*\*  
Structure being measured:  
Top of Tongue  
\*\*\*\*\*

\*\*\*\*\*  
OUTPUT:  
\*\*\*\*\*

START TIME:

Event began at t = 0 + -0.905E+01 +/- 0.152E+00 [minutes]  
In more convenient units:  
Event began at DOY 242 3: 1 +/- 0.152E+00 [minutes]

Origin defined at DOY242 3:10

RADIAL INFORMATION:

RADIAL VELOCITY = 643. +/- 14. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.150E+01 +/- 0.520E-01 [solar radii]  
c(2) = 0.554E-01 +/- 0.125E-02 [radii/min]  
c(2) = 0.643E+03 +/- 0.145E+02 [km/sec]  
c(3) = 0.000E+00 +/- 0.000E+00 [radii/min\*\*2]  
c(3) = 0.000E+00 +/- 0.000E+00 [km/sec\*\*2]

The computed ERRORS in coefficients [BEVINGTON] are:

error in c(1)= 0.63745E-01 [radii] see Bevington pg. 114  
error in c(2)= 0.15278E-02 [radii/min] see Bevington pg. 114

ANGULAR INFORMATION:

ANGULAR VELOCITY = 0.0000E+00 +/- 0.0000E+00 [radians/sec]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 151. +/- 0. [degrees]  
a(2) = 0.000E+00 +/- 0.000E+00 [degrees/min]  
a(2) = 0.000E+00 +/- 0.000E+00 [rad/sec]  
a(3) = 0.000E+00 +/- 0.000E+00 [degrees/min\*\*2]  
a(3) = 0.000E+00 +/- 0.000E+00 [rad/sec\*\*2]

THE TANGENTIAL, RADIAL AND TOTAL SPEEDS AT EACH DATA POINT ARE:

The TANGENTIAL velocity at 3:24 = 0. km/sec

The RADIAL velocity at 3:24 = 643. km/sec

The TOTAL velocity at 3:24 = 643. km/sec

The TANGENTIAL velocity at 3:48 = 0. km /sec

The RADIAL velocity at 3:48 = 643. km/sec

The TOTAL velocity at 3:48 = 643. km/sec

The TANGENTIAL velocity at 3:57 = 0. km /sec

The RADIAL velocity at 3:57 = 643. km/sec

The TOTAL velocity at 3:57 = 643. km/sec

The TANGENTIAL velocity at 4: 5 = 0. km /sec

The RADIAL velocity at 4: 5 = 643. km/sec

The TOTAL velocity at 4: 5 = 643. km/sec

\*\*\*\*\*  
The following info is for estimating goodness of the fit  
\*\*\*\*\*

Fit is ok [ier=1]

Standard Deviation in the height = 0.99

Standard Deviation in start time measurement = 0.154E+02

Error in time = 0.12030E+01 using best fit method

See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.148E-02

Reduced Chi Squared = 0.556E-02

Chi Squared = 0.111E-01

The probability for exceeding chi square = 0.999E+00

The correlation coefficient = 0.999E+00

The probability that no LINEAR correlation exists between the variables = 0.75971

SEE BEVINGTON "Data Reduction and Error Analysis" [1969]

\*\*\*\*\*  
This is a 2 order run  
\*\*\*\*\*

\*\*\*\*\*  
INPUT:  
\*\*\*\*\*

year	day	time	radii	radius	error in angle	error in angle	datatype
1989	242	3:24: 1	2.30 +/-	0.15	151.0 +/-	0.5	SMM
1989	242	3:48:47	3.60 +/-	0.15	151.0 +/-	1.0	SMM
1989	242	3:57: 1	4.10 +/-	0.15	151.0 +/-	1.0	SMM
1989	242	4: 5:15	4.60 +/-	0.15	151.0 +/-	1.0	SMM

\*\*\*\*\*  
Structure being measured:  
Top of Tongue  
\*\*\*\*\*

\*\*\*\*\*  
OUTPUT:  
\*\*\*\*\*

START TIME:

Event began at t = 0 + -0.168E+02 +/- 0.128E+01 [minutes]  
In more convenient units:  
Event began at DOY 242 2:55 +/- 0.128E+01 [minutes]

Origin defined at DOY242 3:10

RADIAL INFORMATION:

RADIAL ACCELERATION = 0.736E-01 +/- 0.845E-02 km/sec\*\*2

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.166E+01 +/- 0.213E-01 [solar radii]  
c(2) = 0.427E-01 +/- 0.148E-02 [radii/min]  
c(2) = 0.495E+03 +/- 0.172E+02 [km/sec]  
c(3) = 0.190E-03 +/- 0.219E-04 [radii/min\*\*2]  
c(3) = 0.736E-01 +/- 0.845E-02 [km/sec\*\*2]

The computed ERRORS in coefficients [BEVINGTON] are:

Approximate error in c(1) = 0.30054E-01 [radii] Bevington pg 154 (8-30)  
Exact error in c(1) = 0.10345E-01 [radii] Bevington pg 154 (8-28)  
Approximate error in c(2) = 0.20967E-02 [radii/min] Bevington pg 154 (8-30)  
Exact error in c(2) = 0.92766E-03 [radii/min] Bevington pg 154 (8-28)  
Approximate error in c(3) = 0.30908E-04 [radii/min\*\*2] Bevington pg 154 (8-30)  
Exact error in c(3) = 0.13824E-04 [radii/min\*\*2] Bevington pg 154 (8-28)

ANGULAR INFORMATION:

ANGULAR ACCELERATION= 0.0000E+00 +/- 0.0000E+00 [radians/sec\*\*2]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 151. +/- 0. [degrees]  
a(2) = 0.000E+00 +/- 0.000E+00 [degrees/min]  
a(2) = 0.000E+00 +/- 0.000E+00 [rad/sec]  
a(3) = 0.000E+00 +/- 0.000E+00 [degrees/min\*\*2]  
a(3) = 0.000E+00 +/- 0.000E+00 [rad/sec\*\*2]

THE TANGENTIAL, RADIAL AND TOTAL SPEEDS AT EACH DATA POINT ARE:

The TANGENTIAL velocity at 3:24 = 0. km /sec

The RADIAL velocity at 3:24 = 557. km/sec

The TOTAL velocity at 3:24 = 557. km/sec

The TANGENTIAL velocity at 3:48 = 0. km /sec

The RADIAL velocity at 3:48 = 666. km/sec

The TOTAL velocity at 3:48 = 666. km/sec

The TANGENTIAL velocity at 3:57 = 0. km /sec

The RADIAL velocity at 3:57 = 703. km/sec

The TOTAL velocity at 3:57 = 703. km/sec

The TANGENTIAL velocity at 4: 5 = 0. km /sec

The RADIAL velocity at 4: 5 = 739. km/sec

The TOTAL velocity at 4: 5 = 739. km/sec

\*\*\*\*\*  
The following info is for estimating goodness of the fit  
\*\*\*\*\*

Fit is ok [ier=1]

Standard Deviation in the height = 0.99

Standard Deviation in start time measurement = 0.154E+02

Value of reduced Chi Squared returned from nllst2 = 0.570E-04

Reduced Chi Squared = 0.321E-03

Chi Squared = 0.321E-03

The probability for exceeding chi square = 0.994E+00

For a second order fit 3 correlation coefficients are given:

(Using equation of motion:  $r = a + bt + at^2$ )

The correlation between the data and the term linear in time = 0.9992E+00

The correlation between the data and the time\*\*2 term = 0.9919E+00

The correlation between the data and the complete equation of motion=0.1000E+01

SEE BEVINGTON "Data Reduction and Error Analysis" [1969]